**T05D05 – Hess’s Law Practice for HW**

Name ………………………………….………….

Directions: Solve each of the following using Hess’ Law (of Summation).

1. Use the thermochemical equations shown below to determine  
the enthalpy for the reaction: 2 Fe3O4(s) 🡪 6 Fe(s) + 4 O2(g)

3 Fe2O3(s) 🡪 2 Fe3O4(s) + ½ O2(g) ∆H= + 244 KJ  
 6 Fe(s) + 9/2 O2(g) 🡪 3Fe2O3(s) ∆H= - 2478 KJ

2. Use the thermochemical equations shown below to determine  
the enthalpy for the reaction: CO2(g ) 🡪 C(s) + O2(g)

H2O (l) 🡪 H2 (g) + ½ O2 (g) ∆H = + 143 KJ

C2H6(g) 🡪 2C(s) + 3H2(g) ∆H = +84.7 KJ  
 2CO2(g) + 3 H2O (l) 🡪 C2H6(g) + 7/2 O2(g) ∆H= + 669.8 KJ

3. Use the thermochemical equations shown below to determine  
the enthalpy for the reaction: H2(g) + ½ O2(g) 🡪 H2O(l)

CO2(g) 🡪 C(s) + O2(g) ∆H= + 393.5 KJ  
 CH4(g) + 2O2 (g) 🡪 CO2 (g) + 2H2O (l) ∆H= - 890.5 KJ

C(s) + 2 H2(g) 🡪 CH4(g) ∆H= - 75 KJ

4. Use the thermochemical equations shown below to determine  
the enthalpy for the reaction: FeO(s) + CO(g) 🡪 Fe(s) + CO2(g)

2 Fe(s) + 3CO2(g) 🡪Fe2O3(s) + 3CO(g) ∆H = + 23 KJ

2 Fe3O4(s) + CO2(g) 🡪 3Fe2O3(s) + CO(g) ∆H= + 39 KJ

3 FeO(s) + CO2(g) 🡪 Fe3O4 + CO(g) ∆H= - 18KJ

1. Use the thermochemical equations shown below to determine  
   the enthalpy for the reaction: 4 PCl5(g) 🡪 P4(s) + 10 Cl2(g)

P4(s) + 6 Cl2(g) 🡪 4 PCl3(g) ∆H= -1084 KJ

PCl5(g) 🡪 PCl3(g) + Cl2(g) ∆H= +111 KJ

6. Use the thermochemical equations shown below to determine  
the enthalpy for the reaction: H2S(g) + 2O2(g) 🡪H2SO4(l)

SO3(g) + H2O(g) 🡪 H2SO4(l) ∆H = - 176 KJ

SO3(g) + H2O(l) 🡪 H2S(g) + 2O2 (g) ∆H = + 661 KJ

H2O (g) 🡪 H2O (l) ∆H = - 44 KJ

Worksheet Modified from Al Olsen, Towson High School, MD